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IS 4793 (1997): Whole Pomfret - Frozen [FAD 12: Fish and Fisheries Products]



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भारतीय मानक

संपूर्ण पोमफ्रीट — फ्रोजन — विशिष्ट

( द्वितीय पुनरीक्षण )

*Indian Standard*

WHOLE POMFRET — FROZEN —  
SPECIFICATION

( *Second Revision* )

ICS 67.120.30

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BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

## FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fish and Fisheries Products Sectional Committee had been approved by the Food and Agriculture Division Council.

Fish is one of the most perishable of all foods and needs proper care from the time it is caught until it is served or processed. Lowering the temperature of fish by a prompt and efficient chilling procedure is fundamental for preservation of fish freshness. The quality of frozen fishery products is influenced by

and transport, method of freezing employed and the environment to which the frozen product is subjected during storage and handling. Of principal concern here is the temperature and humidity of the cold storage area and the protective packaging or glazing afforded the product.

Pomfret belonging to family *Siromatidae*, is a high prized fish of India occurring on the East as well as West coast of the country.

This standard was first issued in 1968 and revised in 1977. The present revision incorporates the following modifications:

- i) Requirement of *E.coli* has been modified, and
- ii) Requirement of Histamine along with its method of test has been incorporated.

In the preparation of this standard, due consideration has been given to the provision of the *Prevention of Food Adulteration Act 1954*, and the Rules framed thereunder and *Standards of Weights & Measures (Packaged Commodity) Rules, 1977*. However, this standard is subject to the restrictions imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# Indian Standard

## WHOLE POMFRET — FROZEN — SPECIFICATION

( Second Revision )

### 1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for whole frozen pomfret of the following species:

<i>Pampus argenteus</i>	Silver pomfret
<i>Pampus chinensis</i>	White pomfret
<i>Parastromateus niger</i>	Brown or black pomfret

### 2 REFERENCES

The following Indian Standards listed, contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated:

IS No.	Title
2237 : 1997	Frozen Prawns (Shrimps) — Specification ( <i>third revision</i> )
4303 (Part 1) : 1975	Code of hygienic condition for fish industry: Part 1 Pre-processing stage ( <i>first revision</i> )
4780 : 1978	Fresh silver pomfret and brown pomfret
8077 : 1976	Procedure for checking temperature of quick frozen foods
11427 : 1985	Methods for sampling for fish and fisheries products.

### 3 GRADES

Whole frozen pomfrets shall be of the following three grades:

Grade	Mass, g	
	Silver and White Pomfret	Brown or Black Pomfret
Large	Above 500	Above 1 000
Medium	251 to 500	701 to 1 000
Small	150 to 250	400 to 700

NOTE — The mass of a single, frozen pomfret in grams mentioned above is the mass obtained after thawing.

### 4 DESCRIPTION

The colour of whole pomfret (frozen), its flesh, shall be characteristic of the respective pomfret species. While the surface discolouration may vary to slight yellow, it shall not be excessively yellow in appearance. The texture of the meat shall be firm.

### 5 REQUIREMENTS

5.1 The material shall be prepared and processed as given in Annex A, under hygienic conditions as prescribed in IS 4303 (Part 1).

5.2 The material used shall be fresh (*see* IS 4780), clean, wholesome and free from defects. The frozen pomfret, on thawing, shall be in sound, intact and undamaged conditions. The product shall be free from any foreign matter.

5.3 The material shall conform to the requirements prescribed in Table 1.

**Table 1 Microbiological Requirements for Whole Pomfret — Frozen**

Sl No. (1)	Characteristic (2)	Limit (3)	Method of Test, Ref to Annex (4)
i)	Total bacterial count/g, <i>Max</i>	100 000	B of IS 2237
ii)	<i>E. coli</i> /g, <i>Max</i>	20	C of IS 2237
iii)	<i>Salmonella</i> , per 25g	Absent	F of IS 2237
iv)	Coagulase positive <i>Staphylococci</i> /g, <i>Max</i>	100	E of IS 2237
v)	Histamine content, mg per 100 g, <i>Max</i>	20	B of this standard

### 6 PACKING AND MARKING

#### 6.1 Packing

6.1.1 The frozen pomfret shall be packed in suitable containers as agreed to between the purchaser and the processor. In the absence of any such agreement the material shall be packed in containers which shall withstand the stress and strain of transportation and prevent deterioration during frozen storage. A layer of moisture proof paper or suitable plastic material shall be used between the

material and the container when frozen pomfrets are packed individually.

## 6.2 Marking

6.2.1 Each containers shall be marked with the following particulars:

- a) Name and grade of the material;
- b) Name and address of the processor;
- c) Batch number;
- d) Net mass;
- e) Date of packing; and
- f) Any other requirements given under *Standards of Weights and Measures (Packaged Commodities) Rules, 1977*.

## 6.2.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

6.2.2.1 The use of the Standard mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 7 SAMPLING

7.1 The method of drawing representative samples of the material, and the criteria for conformity shall be according to the method prescribed in IS 11427.

## ANNEX A

(Clause 5.1)

## PROCESSING OF WHOLE POMFRET — FROZEN

## A-1 PROCESSING

**A-1.1** The fish shall be properly iced and maintained at a temperature not exceeding 3°C till it reaches the freezing factory.

**A-1.2** The material shall be washed in clean potable water containing 5mg/kg to 10 mg/kg chlorine, to remove all adhering impurities and shall be iced immediately in suitable containers.

**A-1.3** The material shall be quick frozen at a temperature of -40°C or below in the minimum

possible time. However, the time taken for freezing the core of the material 2.5 cm thick shall not exceed 3 hours (see IS 8077).

**A-1.4** The quick frozen material shall be uniformly glazed with chilled water, packed in suitable containers and shifted immediately to the cold storage, the temperature of which shall be -23°C or still lower.

**A-1.5** The material shall be grouped according to the grade of the fish (see 3.1)

## ANNEX B

[Table 1, Sl No. (v)]

## DETERMINATION OF HISTAMINE AND OTHER AMINES

## B-1 PRINCIPLE

Amines in fish muscle are extracted with perchloric acid solution and derivatized with dansyl chloride. The amines are determined from the neutralized PCA extract by gradient elution high performance liquid chromatography (HPLC). The determination of histamine, putrescine, cadaverine, spermidine and spermine can be performed by HPLC.

## B-2 APPARATUS

**B-2.1** High performance Liquid Chromatograph (HPLC) with detector system

**B-2.2 LC Column** — Reverse phase  $\mu$ -Bondapack C<sub>18</sub> or equivalent column and guard column.

## B-3 REAGENTS

## B-3.1 Amine Standard Solution

## B-3.1.1 Stock Solution

Dissolve separately the following chemicals in quantities indicated, each in 50 ml purified water (HPLC grade):

- Histamine dihydrochloride — 80 mg
- Cadaverine dihydrochloride — 90 mg
- Spermine diphosphate — 130 mg
- Spermidine diphosphate — 120 mg
- Putrescine dihydrochloride — 90 mg

When stored at 4°C, the stock solution is stable for one month.

## B-3.1.2 Working Standard

Dilute to 100  $\mu$ g/ml with purified water (HPLC grade). The working standard may be stored for one week at 4°C.

## B-3.2 Internal Standard

Dissolve 50 mg 1,7 diaminoheptane in 50 ml purified water (HPLC grade). The solution may be stored for one month at 4°C.

## B-3.3 Dansyl Chloride Solution

Dissolve 100 mg dansyl chloride in 10 ml acetone. Prepare fresh for each analysis and protect from light.

## B-3.4 LC Mobile Phases

## B-3.4.1 Ammonium Acetate 0.1 M

Dissolve 7.7 g ammonium acetate in 1 000 ml purified water, vacuum — filter the solution, using 0.45  $\mu$ m filter, and degas with helium.

## B-3.4.2 Acetonitrile

Vacuum-filter solvent, using 0.45  $\mu$ m filter, and degas with helium.

## B-3.5 Purified Water

Obtain from Milli-Q water purification system (HPLC grade).

## B-3.6 Perchloric Acid (PCA) — 0.4M.

## B-4 PROCEDURE

## B-4.1 Sample Preparation and Extraction

Use samples as large as practicable. Chill the samples to inhibit decomposition. Clean, scale and eviscerate large fish in usual way. In case of small fish use 5 to 10 whole fish. In case of large fish, cut from each, 3 transverse slices, 2.5 cm thick; one slice just back of pectoral fins, one slice half way



between first slice and vent, and one slice just back of vent. Homogenize the flesh or fillet in blender and mix well. Store the homogenized sample at  $-20^{\circ}\text{C}$ .

**B-4.1.1** Weigh 2 g homogenized (thawed, in case of frozen) sample into a screw-cap test tube and add appropriate amount of internal standard; for example, add 125  $\mu\text{l}$  to obtain 1  $\mu\text{g}/\text{ml}$  injection. Homogenize sample in 10 ml of 0.4M  $\mu\text{l}$  PCA with ultraturrax blender. Centrifuge sample for 10 minutes at 3 000 rev/min and rinse supernatant into 25 ml bottle through filter paper. Repeat extraction with 10 ml of 0.4M PCA solution, and mix thoroughly with Vortex mixer. Centrifuge as before. Combine supernatants and adjust to 25 ml with 0.4M PCA.

#### **B-4.2 Derivatization of Sample Extracts and Mixed Standards**

**B-4.2.1** Make 1 ml sample extract alkaline by adding 200  $\mu\text{l}$  of 2 N sodium hydroxide solution, and buffer sample by adding 300  $\mu\text{l}$  saturated sodium bicarbonate. Add 2 ml dansyl chloride solution and transfer reaction mixture to incubator maintained at  $40^{\circ}\text{C}$  for 45 minutes. Remove residual dansyl chloride by adding 100  $\mu\text{l}$  ammonia. After 30

minutes, adjust to 5 ml with acetonitrile, centrifuge for 5 minutes at 2 500 rev/min, and filter supernatant through 0.45  $\mu\text{m}$  filter.

**B-4.2.2** Dilute different amounts of working standard solution together with known amount of internal standard to 1 ml with 0.4M PCA to obtain concentrations from 0.5  $\mu\text{g}/\text{ml}$  to 10  $\mu\text{g}/\text{ml}$ . Prepare dansyl derivatives of calibration standard mixture together with samples as previously described.

#### **B-4.3 Chromatographic Separations**

**B-4.3.1** Use gradient elution programme with a mixture of 0.1 M ammonium acetate as solvent A and acetonitrile as solvent B. Gradient begins at 50 percent and ends at 90 percent acetonitrile in 19 minutes. Equilibrate system 10 minutes before next analysis. Maintaining a flow rate of 1.0 ml/minute and column temperature of  $40^{\circ}\text{C}$ , inject 20  $\mu\text{l}$  sample and monitor at 254 nm with a UV detector with 550 nm as reference.

#### **B-5 CALCULATIONS**

Histamine content in the sample may be ascertained from the standard curve.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards: Monthly Additions'.

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